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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,131	03/19/2004	Bjoern Magnussen	ELLIP-007USB	3151

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EXAMINER	
DOUGHERTY, THOMAS M	
ART UNIT	PAPER NUMBER
2834	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/805,131	MAGNUSSEN ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *21-38* is/are allowed.

6)☒ Claim(s) *1-6,12,14-20 and 39-63* is/are rejected.

7)☒ Claim(s) *7-11,13 and 50* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date __.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 11/30/06 have been fully considered. In Maeno's figures 1 and 2 it is clear that rotation of the driven element occurs. Essentially, in the arguments, the distinction of the applicants is that Maeno's rotation of the driven element, what the applicants call the device, is in a direction that is 90^0 different from theirs'. Thus logically, if the rotation of the driven element (e.g. 401) of Maeno's was tangentially parallel to the direction of axis of the grooved portion (201c) of the drive surface of the drive element then Maeno et al. would show the same invention. However, the claim language does not clearly make that distinction, the word **along** does not clearly convey this directional sense since 'along' does not limit the direction considered in relation to the prior art of Maeno et al. to the direction which the Applicants desire, though the distinction is clearly understood from the arguments. Maeno et al. show the cooperation of the drive surfaces of the drive and driven elements, and the device is driven along a curved axis, though not in the direction of the length of the bottom of the curve but along the curved path.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 48, 49, 51, 61 and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Tobe et al. (US 6,091,179). Tobe et al. show a drive system comprising at least one piezoelectric vibrating motor having a contact area that cooperates with a driven surface of a driven device to translate said device along a path, one of the driven surface and contacting area having side surfaces located on opposing sides of the path to keep the device on the path.

Both the path and driven surface extend along one of a straight or curved axis.

The path is straight and the motor extends along a longitudinal axis that is parallel to the path.

The path is straight and the side surfaces restrain movement of the driven device along a direction that is in the plane of the path and perpendicular to the path.

In figs. 1A and 1B, there are two sets of side surfaces with each set located on opposing sides of the driven device (4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 4, 5, 39, 52, 53, 55 and 58 are rejected under 35 U.S.C. 102(b) as anticipated by Maeno et al. (US 6,380,660) or, in the alternative, under 35 U.S.C. 103(a)

as obvious over Maeno et al. (US 6,380,660) in view of Tobe et al. (US 6,091,179). Maeno et al. show (figs. 1, 2) a drive system comprising at least one vibrating motor having at least one vibration generator (3) each as well as at least one resonator (201, 202) each and a device (401, 402) that is driven by the at least one motor, the resonator (201, 202) having a contact area that cooperates with a driven surface of the device (401, 402) to drive said device (401, 402) along a path with the path and driven surface extending along one of a straight or circular axis, at least one of the resonator (201, 202) contact area and the device (401, 402) surface having a surface profile (201c, 202c) configured to guide the device (401, 402) by having side surfaces located on opposing sides of the path to keep the device between the side surfaces and on the path.

The vibrating generator (3) is made of a piezoelectric material. See col. 6, line 13.

The device surface (of 401, 402) driven by the contact area (201c, 202c) has a profile comprising an indentation or protrusion. Note that the contact areas (201c, 202) are indented in a circular cut-out fashion.

The device (401, 402) surface driven by the contact area (201c, 202c) has a profile comprising an indentation produced by wear. Note that over time such would occur, particularly in the figure 2 embodiment where the 201c and 202c surfaces do not precisely match the shape of 401 and 402.

Maeno et al. show (figs. 1 and 2) a piezoelectric drive system comprising: a piezoelectric vibration motor having a selected contacting portion (201b, 202b) to

drivingly engage a driven element (401, 402) and to move it along one of a straight or curved path when an electric control signal is applied to the piezoelectric motor, and wherein the selected contacting portion comprises an indentation (201c, 202c) having side surfaces located on opposing sides of the path so that the selected contacting portion partially embraces the driven element (401, 402) to keep the driven element between the side surfaces and on the path.

The contact area (201c, 202c) is on an edge of a portion (top and bottom edges) of a resonator where the portion of a resonator extends along a longitudinal axis that is not parallel to the axis along the path. Note that the path is circular and the resonator linearly arranged.

The path is curved (it's a circular path) and the contact area is located on a portion of a resonator (top and bottom) that resonator (*sic*) extends along a longitudinal axis that is inclined to the axis (it partially encloses the path) that extends along the path.

The path is curved about a rotational axis and the side surfaces restrain movement of the driven element along that rotational axis.

In arguendo, if the invention of Maeno et al. as noted above does not show the resonator with a contact area that cooperates with a driven surface of the device to drive said device along a path with the path and driven surface extending one of a straight one of a straight or curved axis, Tobe et al. show (figs. 2A, 2B) a drive system comprising at least one vibrating motor having at least one vibration generator (11b) each as well as at least one resonator (32) each and a device (4) that is driven by the at

least one motor, the resonator (32) having a contact area (33) that cooperates with a driven surface of the device (4) to drive said device (4) along a path with the path and driven surface extending along one of a straight or circular axis, at least one of the resonator, (32) contact area and the device (4) surface having a surface profile (groove 33) configured to guide the device (4) by having side surfaces located on opposing sides of the path to keep the device between the side surfaces and on the path.

The contact area (33) is on an edge of a portion (top edge) of a resonator where the portion of a resonator extends along a longitudinal axis that is not parallel to the axis along the path. Note that the path in fig. 2A extends out of the paper, while the longitudinal extension is along the plane of the paper.

Tobe's profile of the groove and moving element are not precisely configured to match as one is circular and the other rectilinear.

It would have been obvious to one having ordinary skill in the art to configure precisely the groove and device of Tobe et al. such as is shown by Maeno et al. in order to prevent even minor dislocation of the device which Maeno et al. teach by their configuration.

Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeno et al. (US 6,429,572) in view of Tamai et al. (US 5,760,529)or over Maeno et al. (US 6,429,572) in view of Tobe (US 6,091,179) further in view of Tamai et al. (US 5,760,529). Given the invention of Maeno et al. as noted above, or the combined invention of Maeno et al. and Tobe et al. as noted above, over time, the contact area will be shaped by wear. The contact area comprises one of an indention or a protrusion

as noted above. They do not show the driven surface as being of a different hardness than the contact area.

Tamai et al. teach (see claim 1) the driven surface as being of a different hardness than the contact area. Note that on the driven surface an iron oxide film is formed that is different from the iron oxide film formed on the contact surface and each of the driven member and resonator may likewise be composed of different materials, see claims 3 onward. Note that these materials have different surface hardnesses. This is shown in Table 1. Note that formation of the oxide films depends on at least the temperature during use and the material of the components.

As each of the component materials, that of the resonator and that of the driven member may be different, the noted materials are configurable such that the contact area of the resonator can be made of a softer material than the driven surface. See again the material hardnesses in Table 1.

Tamai et al. don't show the claimed indention and protrusion arrangement.

It would have been obvious to one having ordinary skill in the art to employ the design of Tamai et al. in the device of Maeno et al. at the time of that invention, such that the Maeno et al. device has a driven surface of a different hardness than a contact area in order to reduce wear as Tamai et al. note in their SUMMARY OF THE INVENTION.

Additionally, it would have been obvious to one having ordinary skill in the art to employ materials of different hardnesses in the device of Maeno et al. since it has been held to be within the general skill of a worker in the art to select a known material on the

basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPA 416.

Claims 12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeno et al. (US 6,429,572) in view of Zumeris (US 5,877,579) or over Maeno et al. (US 6,429,572) in view of Tobe (US 6,091,179) further in view of Zumeris (US 5,877,579). Given the invention of Maeno et al. as noted above, they do not show the device comprising at least two motors that are arranged in the same orientation to drive the driven element in the same direction.

Zumeris shows (fig. 6) two motors that are arranged in the same orientation to drive the driven element (30) in the same direction.

Zumeris doesn't show a surface texture or surface profile configured to guide the device.

Zumeris teaches driving the motors in parallel in figures 6 and 9 for example. How the driven device moves, e.g. the number of directions is a method of driving the device which isn't further limiting to the claimed structure. Likewise, Maeno et al. and Zumeris do not disclose whether or not the motors are urged against the driven device with respective forces that differ from each other, or if the motors have different operating frequencies and amplitudes. These too are methods of driving the device. It has been held that a recitation with respect to the manner in which a claimed apparatus is intnede3d to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham 2 USPQ2d 1647 (1987).

It would have been obvious to one having ordinary skill in the art to employ two motors as Zumeris shows, in the device of Maeno et al. at the time of his invention, in order to allow a heavier load to be driven.

Additionally, it would have been obvious to one having ordinary skill in the art to use two motors in the same direction in the device or Maeno et al. at the time of his invention since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper C0. v. Bemis Co., 193 USPQ 8.

Claims 40-47, are rejected under 35 U.S.C. 103(a) as obvious over Maeno et al. (US 6,380,660) in view of Tobe et al. (US 6,091,179). Given the invention of Maeno et al., as noted above, the invention of Maeno et al. further shows a beveled surface (e.g. 201c in fig. 2) inclined at an angle selected to place that side surface into flat engagement with the engaging surface of the driven element.

Maeno et al. show two driven elements being engaged by the piezoelectric motor.

The piezoelectric vibration motor has an elongated shape and the selected contacting portion is located on an edge (top and bottom edges) of that elongated shape.

The invention of Maeno does not show the path as perpendicular to surface normals of the side surfaces at locations where [the] driven element contacts the side surfaces. Maeno doesn't show a clear pushing spring urged against the piezoelectric

motor, however the housing supports the driven element by 402a (see fig. 7C for example) which has resilient properties.

Given the invention of Tobe et al. as noted above, Tobe et al. show the path as perpendicular to surface normals of the side surfaces at locations where [the] driven element contacts the side surfaces.

The path is straight.

The piezoelectric vibration motor comprises a piezoelectric element (11b) that is parallel to the path.

The piezoelectric vibration motor has an elongated shape and the selected contacting portion is located on one side (top side) of that elongated shape.

The piezoelectric vibration motor has an elongated shape and the selected contacting portion is located on an edge (top edge) of that elongated shape.

The driven element (4) may be resiliently urged against the piezoelectric motor by a spring. Note figure 1A in which a spring (34) is part of the arrangement.

Tobe et al. does not show the driven element as being partially embraced by the selected contacting portion. Tobe et al. do not show a beveled surface inclined at an angle selected to place that side surface into flat engagement with the engaging surface of the driven element. Tobe et al. do not show two driven elements.

It would have been obvious to one having ordinary skill in the art to configure precisely the groove and device of Tobe et al. such as is shown by Maeno et al. in order to prevent even minor dislocation of the device which Maeno et al. teach by their configuration.

Regarding driving two motors with a single piezoelectric motor, it would have been obvious to configure the Tobe et al. device to drive two driven elements such as is clearly taught by Maeno et al., at the time of the Tobe et al. invention, since this would allow for additional work to be performed by the device. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention of Tobe et al. was made to configure it to drive two driven elements, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Claims 54, 56, 57, 59, 60 are rejected under 35 U.S.C. 103(a) as obvious over Maeno et al. (US 6,380,660) in view of Tobe et al. (US 6,091,179). Given the invention of Maeno et al. as noted above they don't show the path as being straight and the contact area being on a portion of a resonator extending along a longitudinal axis that is parallel to the axis along the path.

Tobe et al. show the path as being straight (note the device is linearly driven) and the contact area being on a portion of a resonator extending along a longitudinal axis that is parallel to the axis along the path. For example see fig. 2B.

The path as noted, is straight and the side surfaces restrain movement of the driven device along a direction that is in the plane of the path and perpendicular to the path.

In figures 1A and 1B it is clear that there are two sets of side surfaces located on opposing sides of the driven device.

As noted, the path is straight and the side surfaces restrain movement of the driven element along a direction that is in the plane of the path and perpendicular to the path.

As noted, in figures 1A and 1B it is clear that there are two sets of side surfaces located on opposing sides of the driven device.

It would have been obvious to one having ordinary skill in the art to configure precisely the groove and device of Tobe et al. such as is shown by Maeno et al. in order to prevent even minor dislocation of the device which Maeno et al. teach by their configuration.

Claim 62 is rejected under 35 U.S.C. 103(a) as obvious over Maeno et al. (US 6,380,660) in view of Tobe et al. (US 6,091,179). Given the invention of Maeno et al. as noted above, they further show the path is curved about a rotational axis, and they show the side surfaces restrain movement of the driven element along that axis.

Maeno et al. do not show one of the driven surface and the contacting area having side surfaces located on opposing sides of the path to deep the device on the path.

Given the invention of Tobe et al. as noted above, they do not show a curved path about a rotational axis and the side surfaces restrain movement of the driven element along that axis.

It would have been obvious to one having ordinary skill in the art to employ a curved path about a rotational axis of Tobe et al. wherein the side surfaces restrain movement of the driven element along that axis, such as is shown by Maeno et al. in

order to allow it to perform rotational motion thereby making the device more versatile in application.

Allowable Subject Matter

Claims 21-38 are allowed.

Claims 7-11, 13, 50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In addition to the previous reasons for allowance, claim 25 and those claims dependent on it are allowed and the following is an examiner's statement of reasons for allowance: the prior art fails to show a drive system comprising a vibrating motor with a vibration generator and resonator which is used to move a device and has a contact area that cooperates with a surface of the device wherein either the contact area on the resonator or the surface area on the driven element comprises is a protrusion located along sides of the path of motion and extending into indentations formed in the other of the contacting area and driven surface an amount sufficient to guide the driven element relative to the resonator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd

January 22, 2007

TOM DOUGHERTY
PRIMARY EXAMINER